Mount Diablo Astronomical Society

Diablo MoonWatch

November 2012

General Meeting

Tuesday November 20, 2012

Swap Meet

Doors open at 6:45 p.m.
Concord Police Association Facility
5060 Avila Road, Concord

MDAS holds a Swap Meet every two years; enough time for everyone to collect stuff in their garages to make it worth while.

There are three ways to move your items:

1) Simply price tag them and sell them from a table. The club will ask 5% of the proceeds.

2) Hold a "silent" auction, where you place a sheet of paper next to the item in question along with a minimum price, and let people declare their bid. The highest bid at the end of the evening wins. Again, the club will ask 5% of the proceeds.

3) Donate your item(s) to MDAS. The club will gladly accept your generous donation and will sell the item silently as a fundraiser.

If you have any questions, contact Rich Ozer at rozer@pacbell.net

Astronomy's role in Christian and Islamic Religions.

Common ground in a strife stricken world.

By Jim Scala

We all enjoy the beauty of a waxing or waning crescent moon. Does it surprise you that they're central to both Christian and Islamic religions with Israel and Judaism having important parts? Since these religions are involved in current worldwide strife, with Israel caught in the middle, it seems right to understand the common ground they share.

In 6 BCE (before the current era), that's 2,018 years ago, the Magi had predicted an occultation of Jupiter by the waning crescent moon which was between 30 and 40 hours from new. This spectacular event would be visible from Israel against a dark early morning sky about an hour

(Continued on page 5)

The Waning Crescent Moon of October 2010. I have superimposed an Image of Jupiter to show how it would have appeared 2018 years ago, in the early morning of April seventeenth.

✔*Please note:*

New Location

as of January 2013

As of January 2013 onward, our regular monthly society meeting nights are moving from the Concord Police Academy to the Lindsay Wildlife Museum in Walnut Creek at the usual day and time every month.

President's Corner

Einstein's Cross at CalStar 2012

by Chris Ford

Two months ago, I attended the CalStar star party held between September 13th to 15th near Lake San Antonio, mid way between the Bay Area and LA along with a few fellow society members.

My third CalStar, this event is distinguished by its informal nature, low density attendance, and spread out layout. The regimented rows of tents and telescopes characteristic of events such as the Golden State Star Party are almost absent. Instead one just finds a suitable spot anywhere in the designated dark zone and simply sets up. Being a smaller star party, shower and food trucks are absent but Calstar has its own distinctive character and is also a shorter 3 hour drive from the Bay Area.

With 100 degree plus temperatures during the daytime, this CalStar was definitely a hot one! The temperature dropped to the 40's overnight presenting a temperature gradient to optical cooling. CalStar was also significantly more dusty than I recall from previous years, a flavor of which can be gleaned from the pictures. Still, mere heat and dust is no barrier to the determined astronomer and I set up my 24" telescope to hunt down one very difficult object in particular. The skies are extremely dark at this location and the seeing is also usually good. For any general target object, this year was not a disappointment.

Fellow member Alan Agrawal and I spent much of one night hunting a target requiring the darkest skies, Einstein's Cross which appeared a feasible target for the seeing conditions. This object is a gravitational lens in which a foreground galaxy (PGC 69457) about 400 million light years distant from us bends the light of a 8 billion light year distant quasar into 4 images. This is direct visual proof of relativity in which gravitationally massive objects bend space and thus the light passing them. It is also one of the most distant objects in the universe that can be observed through amateur telescopes, but it is not easy!

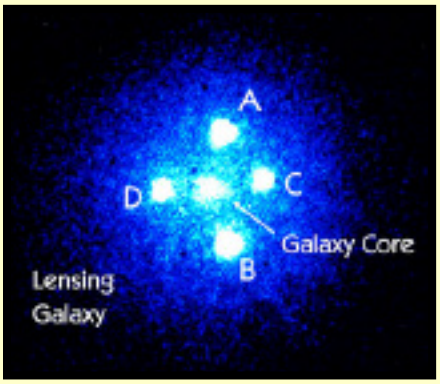
A very unregimented star party.

A very dusty star party!

We had no problems with finding the foreground "lensing" galaxy PGC 69457, however breaking apart the four images of the 8 billion light year distant quasar was actually pretty hard and at the limit of the conditions at CalStar this year, and we could not quite pull it off. We went to very high magnification including stacking 2X and 4X Powermate's and even used a 12mm equivalent image intensifier! Still we could see something there, and some of those 8 billion year old photons were certainly stimulating our retinas. That we could perceive light from an object this distant and understand that we were seeing something twice as old as the Earth, was very gratifying and a fascinating test of observational abilities and conditions. Definitely an object to return to.

Einstein's Cross at CalStar 2012 *(Continued from the previous page)*

Some views of the telescope field, all very informal with no specified layout. (My 24" used on Einstein's Cross in the foreground)

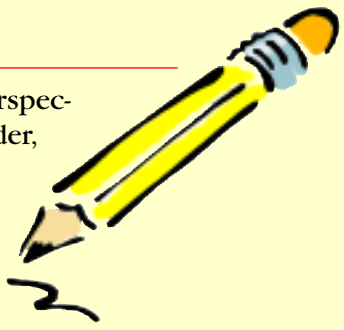


Einstein's Cross as it appears through a long exposure CCD image. The 4 points of the dross are all the same quasar.

And Finally....

What a wonderful show Space Shuttle Endeavor presented to us in October as it circled the Bay Area on the way to its permanent museum location in LA. Here are some pictures of the Shuttle on its carrier plane over the Emeryville iHop that I took with a Canon DSLR and 200mm lens. Hard to believe that this wonderful flying machine is now a museum piece.

Writers Wanted



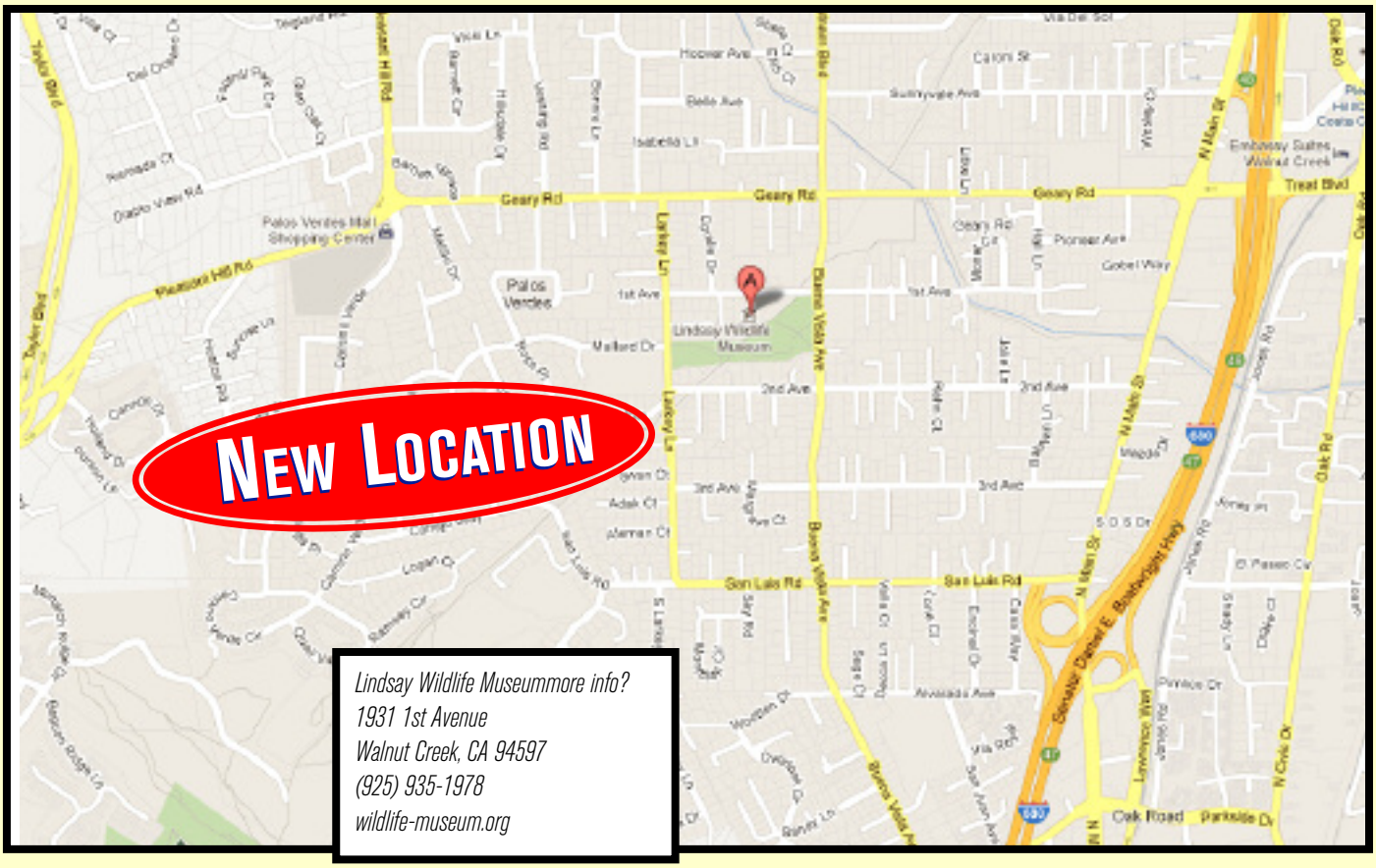
We are always looking for new articles and content. If you have astronomical perspectives or experiences to share with your fellow members that you would us to consider, please feel free to contact me Chris (cford81@comcast.net) or our newsletter editor Vianney. (veloroute@hotmail.com)

Clear skies!

Chris and Vianney

General Meeting will have a New Location as of January 2013

Same Date and Same Time



Time to Order Your MDAS Jacket!

It's time to place an order for your very own official MDAS jacket! (Or order one as a holiday gift for your favorite amateur astronomer!)

Jackets are embroidered on the back with our club name, includes an MDAS patch sewn on the front, and your first name embroidered on the front. The cost of the jacket is $55.00.

The order will be placed on December 1st, so reserve yours now! Order online here:

http://www.mdas.net/mdas_store.html#MDAS_Jacket

You may also reserve your personalized jacket by sending an email to berendsen@aol.com or call Marni Berendsen at 925-930-7431. Be sure to tell us the size you want (M, L, XL, XXL) and the first name you want embroidered on the jacket. You can bring a check for $55 made payable M.D.A.S. to the next meeting or send the check to this address:

Mount Diablo Astronomical Society
P.O. Box 4889
Walnut Creek, CA 94596

Wear your MDAS colors proudly to all our events!

Astronomy's role in Christian and Islamic Religions. *(Continued from the front page)*

before sunrise.

An occultation occurs when the moon passes in front of a star or planet and lasts for up to an hour depending on how central it is on the lunar disk. On our modern calendar, it was April 17th and Jupiter wouldn't reappear from behind the moon before the sky was fully light. So, the disappearance would have been seen in a rather small area, and its reappearance wasn't observed.

Magi were Zoroastrian priests who believed that the stars had cause and effect influence on human life and events. By any standard, they were excellent astronomers who accurately plotted the paths of the moon, planets and comets among the stars. They used their predictions to practice a type of astrology on which their religion was founded.

Based on a divine vision by Zoroaster (628-551 BCE), Zoroastrianism was the religion of Persia. To them, an eclipse of Jupiter by the waxing crescent moon meant that a divine being – a king of kings – was to be born where it took place. Jupiter was in the constellation of Aries, and the event occurred over Israel which, taken together, meant he was to become king of the Jews since Aries was the constellation of the Jewish people.

To fully grasp the import of the event, you must realize that they had no understanding of astronomical distances and thought the event occurred above the place

where it was seen – Israel. A small party of Magi traveled hundreds of miles for several weeks to witness the event, and pay homage to the divine child that, in their concept of heavenly cause and effect would be born.

Amateur and professional astronomers would travel to observe, photograph, time and analyze a similar occultation today – no mysticism involved. Indeed, it would undoubtedly make the TV news and be broadcast live. In those days only the Magi knew it would occur. No one in Israel would have known until the Magi arrived and told them and given the language barrier even that didn't accomplish much.

In the New Testament, Mathew describes the Magi's pilgrimage to witness the event and the special gifts they brought for a divine child. They carried gold signifying his kingship over all kings, Frankincense, verifying his divine birth, and Myrrh, proving that he would defeat death and achieve everlasting life.

Much has been written about the Christmas star that coincided with the birth of Jesus. In the past, authors ascribed it to a bright and widely visible star saying it was the Venus, planetary conjunctions, a supernova, a comet and other spectacular sightings. A bright, easily visible unpredicted object would have been easily seen over half the world, widely reported– probably for months. Drawings exist of Venus, comets (Halley's and many others), and the Crab nebula supernova, among other novas. All were visible from all over the world. In fact, the drawings prove that many were visible during daylight hours.

In contrast to those events, the waning crescent moon up to only 40 hours before new moon is visible shortly before dawn in a small area. And an occultation of Jupiter would have only been visible from a much smaller area. In spite of those restrictions, the Magi predicted when it would occur, where it would be visible and they believed the child born under it would have divine influence over the Jews, Israel and have a message for all mankind.

They correctly predicted a second occultation of Jupiter that took place in daylight and couldn't be seen. However, Because Jupiter was in Aries, the early morning occultation was the only one that counted for religious reasons. Their pilgrimage was necessary to observe it and to see the child.

Surprisingly, the people in Israel would have been unaware of this event because the Magi came from what is now Iran. In contrast, shepherds would have seen it as Matthew reported, because it occurred at a time (April 17th) when they had to watch their flocks by day and night. So, the occultation of Jupiter by the waning crescent moon in 6 BCE fits the New Testament Christmas Star story and is now widely accepted. And we now understand why no written records or drawings of an unusually bright star, or other object, have been found.

Astronomy's role in Christian and Islamic Religions. *(Continued from the previous page)*

Shepherds didn't write and the Magi spoke a different language.

The first book of the New Testament wasn't written until over 80 years later. Since life expectancy was about 40 years, the information would have been handed down verbally. However, much knowledge of the ancient world was passed orally and usually tests out. Think of the Odyssey, the Iliad and other accounts that anthropologists have proven correct even though the important people involved were often embellished and almost given super powers.

The waxing and waning crescent Moon symbolically supports Jesus' death and resurrection which is a theme found in observatories including Stonehenge and others. Next time you observe a slender crescent moon think of the influence it had on our world.

Islam relies on the waxing crescent Moon for its entire calendar.

In 622, the prophet Muhammad (570-632) founded his religion based on the religion of Abraham (Old Testament), accepted Christianity and its teachings about the birth of Jesus. He based his religious year on the lunar calendar and chose the day following the first crescent sighting as each month's starting date. He rejected the full moon to focus on the beginning rather than the middle. By using the first observable crescent, Muhammad's time frame works very well even though it appears somewhat inaccurate to us with all our sophisticated instruments.

By watching the last waning crescent a person can know when the new moon will occur and where to first sliver of the waxing moon. Most of us can spot a 24-hour crescent if we know where to look and sightings of 18 hour crescents are often recorded. A few 15 hour crescents have been reported. Let's see how we'd do for the first three months of 2005 in California. It's all on record and can be checked.

The Blue Mosque in Istanbul, Turkey dominates the skyline.

January, 2005: New Moon was January 10 at 12:03 PM; our first sighting was on January 11 at 5:19 PM when the moon was 31 hours 4 minutes old. The month would begin on January 12th and was the last month of the Islamic year 1425

February, 2005: New Moon was February 8, at 3:28 PM; first sighting of a 26 hours 16 minutes old Moon was on February 9 at about 5:44 PM. A keen-eyed observer, with a good horizon, might see it at 24 hours 16 minutes. The month began on February 10th and marked the first lunar month of 2005. On the Islamic calendar, February10, 2005 was New Year's Day.

March, 2005: New Moon was March 10, at 02:10 AM; first sighting was on March 11 at 6:06 PM when the moon was 39 hours 56 minutes old. No one could do much better than about 35 hours. So, the second month of 2005 began on March 12th.

This short exercise illustrates that, although a crescent moon sighting based calendar appears imprecise, it averages out very nicely. Since the lunar calendar is just over 354 days, it calls for a correction by simply adding a day for a 355 day lunar year. Muhammad did quite well considering that every four years we need a leap year to keep our calendar correct.

Islamic followers pray five times daily facing Mecca. In early times, religious leaders climbed the minarets to announce prayer times, and nowadays they're listed

Astronomy's role in Christian and Islamic Religions. *(Continued from the previous page)*

This Two Minaret Mosque Dominates the South Entrance of the Suez Canal.

by the local media. Most Islamic temples have four minarets covering all four points of the compass and in modern cities they characterize, but no longer dominate, the skyline.

How would you accurately set five daily prayer times to be the same everywhere in your religion? You'd have to use the sun. First is at the start of astronomical twilight and the last is at the end of astronomical twilight. Although we think of morning and evening twilight as somewhat arbitrary, when observations are consistently made at 1000 feet, they average out quite nicely. Islamic prayer times are as follows:

Fajer: Starts at astronomical morning twilight. Twilight was determined from an altitude of 1,000 feet.

Dhohor: Transit time which can be determined with great accuracy simply using a stick's shadow to find minimum length. A special rod was used.

Asr: Halfway, determined when the shadow equals its length plus the length of its shadow at Dhohor and is a very accurate determination of the mid-afternoon sun.

Maghreb: Sunset which, when the same clear horizon is consistently used is very accurate.

Isha: The end of evening twilight; always taken at an altitude of 1000 feet.

Since Muhammad's calendar and prayer times are determined locally, they're the same throughout the Islamic world. His choice nurtured the development of astronomy, accurate tools, clocks and calculations. How it nurtured modern mathematics is a fascinating story.

Waxing and waning crescent moons have other important roles in religion and are given space in ancient observatories found in the old and new worlds.

Unfortunately, they're seldom discussed because emphasis in those places was placed on sun lines to identify the equinoxes for successful agriculture.

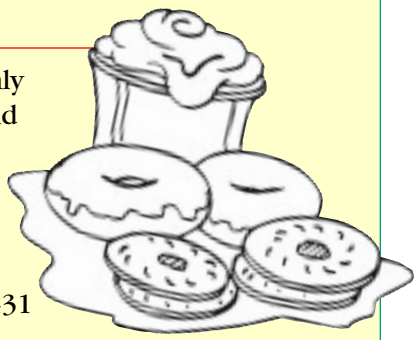
Acknowledgements:

I am grateful to Dr. Mohammed Odeh of the Jordanian Astronomical Society for his patient help with Islamic astronomy. My discussions of the Israeli world of 6 BCE with Rabbi Fleischman and early Christianity with Father Stanley Adamzyck are personal treasures. Most credit goes to Dr. Michael Molnar, of Rutgers University. Professor Molnar not only did the extensive astronomical research, he also conducted the anthropologic research analyzing old coins, clay artifacts and Zoroastrian astrology without which this wouldn't have been possible.

Mount Diablo Astronomical Society Event Calendar–November 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	31	1	2	3 Observatory Maintenance (Private) Sunset: 6:08 PM
4	5 Board Meeting (Private)	6	7	8	9	10 Society Observing (Private) Sunset: 5:01 PM
11	12 Veterans Day	13 MDAS Imaging SIG (Private)	14 7:00 PM Black Holes Talk	15 DVMS Stargazing (Private)	16	17 Society Observing (Private) Sunset: 4:56 PM
18	19 7:00 PM Concord Library Astronomy	20 7:15 PM GenMtg: Swap Meet	21	22 Thanksgiving Day	23	24 Sunset: 4:52 PM
25	26	27	28	29	30	1

Are you a Cookie Monster?



MDAS is in need of a member or two to arrange for refreshments at our monthly meetings. All you need to do is pick up an assortment of cookies and beverages, and arrange them on a table at the meeting by 7:00 pm. You'll even be reimbursed for your expenses.

Best of all: You get to take home the leftovers!

If this sounds like a sweet deal to you, give Marni a call (or text) at 925-930-7431 or email berendsen@aol.com.)

Board Members & Address

President
Chris Ford - cford81@comcast.net

Vice President
Rick Linden - Rick.C.Linden@gmail.com

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Marni Berendsen - berendsen@aol.com

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Dick Flasck - rflasck@aol.com

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Mailing address:
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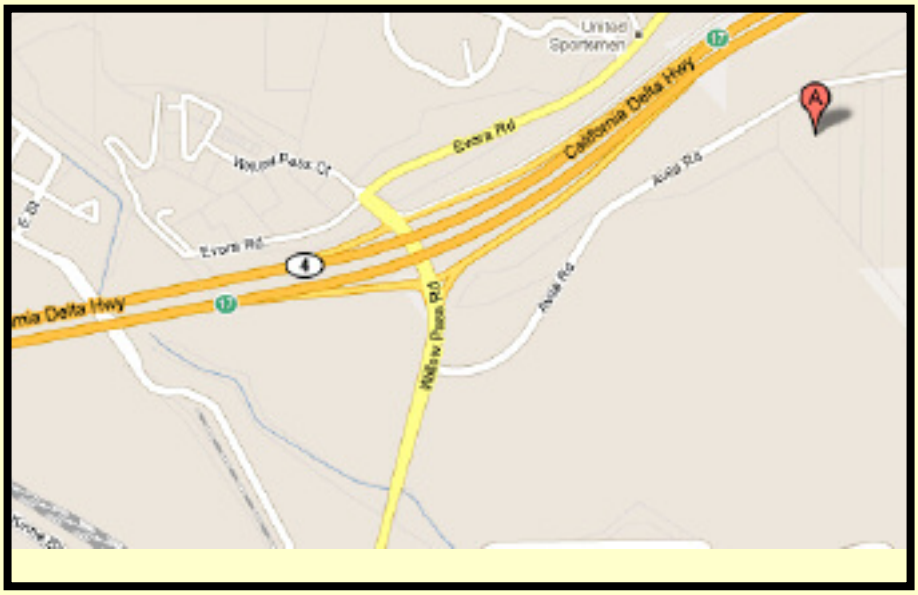
P.O. Box 4889
Walnut Creek, CA 94596-3754

General Meetings:
Fourth Tuesday every month, except on the third Tuesday in November and December. Refreshments and conversations Meetings begin at 7:15pm.

Where:
Concord Police Association
5060 Avila Road, Concord, CA 94596-3754
The last meeting at this address will be in December 2012.

Directions to facility:
Avila Road is off Willow Pass Road. Turn east onto Avila Road approximately 300 yards south of the Willow Pass Road off-ramp from the Route 4 freeway. Turn right into the Police Association Facility at the crest of the first hill.



Scopes Needed

Signup if you can, DVMS has a great curious crowd.

Thank you and Hope to see you out there. . .
Jim Head

Upcoming Mount Diablo Astronomical Society Events:

Thursday November 15, 2012 — 7:30 p.m. - 9:00 p,m,
Diablo View Middle School Stargazing, Diablo View Middle School Starparty, Clayton, CA, set up 5:00 p.m.

Monday November 19, 2012 — 6:30 p.m. - 10:00 p.m.
Concord Library Astronomy night, Concord Library, Concord, CA, set up 5:00 p.m.